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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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08/932.228 09/17/97 SCHUEGRAF

K MICRON.009DV

MM21/0812  
KNOBBE MARTENS OLSON AND BEAR  
620 NEWPORT CENTER DRIVE  
SIXTEENTH FLOOR  
NEWPORT BEACH CA 92660-8016

EXAMINER

VU,H

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

08/12/98

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
08/932,228

Applicant(s)  
SCHUEGRAF ET AL.

Examiner  
HUNG K. VU

Group Art Unit  
2811



☐ Responsive to communication(s) filed on \_\_\_\_\_

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 11-16 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 11-16 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2811

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 12 is objected to because of the following informalities: On line 2, a word "ration" should be changed to "ratio". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 2, what does Applicant mean by "an aspect ratio"? Applicant needs to define whether it is "depth:width" or "height:width" or "width:depth", etc.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2811

Claims 11, 14, and 15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Trumpp et al..

Trumpp et al. discloses an isolation structure in a semiconductor substrate comprising, a recessed portion (9) formed therein in the semiconductor substrate (1); and a dielectric material (polyimide 13) filling the recessed portion, the dielectric material having a dielectric constant of less than 3.5, that is lower than the dielectric constant of silicon dioxide, which is 3.9; a barrier layer (11, 12) disposed between the recessed portion of the semiconductor substrate and the dielectric material (polyimide 13). See Figure 13 of Trumpp et al. and Table 6 of Kirk-Othmer.

4. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trumpp et al. in view of Swan et al..

With regard to claims 12 and 13, Trumpp et al. disclose all of the claimed limitations except the recessed portion comprises a trench structure having an aspect ratio (depth:width) of less than 2:1, and a depth of less than 200 nm. Swan et al. discloses a trench isolation structure having an aspect ratio of less than 2:1, and a depth of less than 200 nm. See column 4, lines 20-25 of Swan et al.. Therefore, it would have been obvious to the one in the art at the time the invention was made to form a trench having the aspect ratio of less than 2:1 and a depth of less than 200 nm in order to decrease the void formation and to increase the surface planarity of the final trench structure.

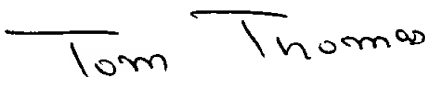
Art Unit: 2811

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trumpf et al.. Trumpf et al. discloses all of the claimed limitations except the dielectric material comprises a Fluoride-doped silicon dioxide composition. Although Trumpf et al. and Swan et al. do not teach exactly the material as that claimed by Applicant, the material differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung K. Vu whose telephone number is (703) 308-4079.

Vu

August 7, 1998

  
Tom Thomas  
Supervisory Patent Examiner  
Technology Center 2800